Acoustic data

Standard: BS EN 13141-7:2010

Ventilation for buildings. Performance testing of components/products for residential ventilation. Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings

Product **HRV1.3 Q Plus Eco**

		'A' Weighted Sound Power Levels dB re. 1pW Frequency Hz								Overall L_W	Overall L_{WA}	Casing Breakout dBA @ 3m
Speed		63	125	250	500	1k	2k	4k	8k			
13.5l/s @ 5Pa (18%)	Induct Outlet	41	43	40	43	36	28	25	26	68	48	16
	Induct Inlet	30	40	32	33	24	22	25	26	59	42	
	Breakout	14	22	24	27	25	22	25	26	43	33	
25.9l/s @ 18Pa (30%)	Induct Outlet	48	54	53	53	56	44	36	29	75	61	21
	Induct Inlet	40	47	42	41	40	30	26	26	68	50	
	Breakout	22	31	31	33	32	26	25	26	51	39	
32.8l/s @ 27Pa (41%)	Induct Outlet	50	58	57	58	59	50	42	36	79	64	25
	Induct Inlet	40	54	47	45	43	35	28	26	72	56	
	Breakout	24	33	35	37	36	31	27	26	53	42	
37l/s @ 34Pa (53%)	Induct Outlet	50	59	62	60	62	54	45	40	79	67	26
	Induct Inlet	40	55	48	48	45	38	31	27	72	57	
	Breakout	25	35	36	39	38	33	29	26	55	44	
43.2l/s @ 45Pa (65%)	Induct Outlet	52	62	64	63	63	62	49	44	82	70	29
	Induct Inlet	44	54	50	50	47	43	34	29	73	58	
	Breakout	25	38	38	41	40	38	32	26	57	46	
49.3l/s @ 60Pa (77%)	Induct Outlet	57	63	64	65	65	65	52	48	85	72	32
	Induct Inlet	48	54	53	53	49	48	37	31	76	60	
	Breakout	30	42	41	44	42	42	35	27	61	49	
58.6l/s @ 80Pa (88%)	Induct Outlet	60	70	68	69	69	67	57	53	89	76	35
	Induct Inlet	50	57	56	56	52	51	42	36	78	62	
	Breakout	35	43	43	47	46	45	39	29	64	52	
63.3l/s @ 100Pa (100%)	Induct Outlet	61	68	70	71	70	69	59	56	89	77	36
	Induct Inlet	50	58	59	59	54	53	45	39	79	64	
	Breakout	34	44	45	48	47	48	41	31	64	54	

Measurements taken at full speed with a resistance of 100Pa, then at the stated percentage speed settings of the unit and corresponding reduced pressure

Inlet and outlet levels are Induct (BS EN 13141-7 clause 6.4.2 requirement), casing breakout is hemispherical - for spherical subtract 3dB

Titon acoustic data is independently tested at Sound Research Laboratories

Data is specifically tested for the Eco unit (100% bypass) - non bypass variants with deeper heat exchangers will offer lower acoustic levels

SRL report 80757-SRL-RP-XT-002-P1, 12/08/22

Acoustic data

Product **HRV1.3 Q Plus Eco**

		Sound Power Levels dB re. 1pW Frequency Hz								Overall L_W	Overall L_{WA}	Overall dBA @ 3m Hemispherical	Overall dBA @ 3m Spherical
Speed		63	125	250	500	1k	2k	4k	8k				
13.5l/s @ 5Pa (18%)	Open Outlet	49	46	42	43	35	27	24	27	52	43	25	22
	Open Inlet	38	43	34	33	23	21	24	27	45	35	17	14
	Breakout	40	38	33	30	25	21	24	27	43	33	16	13
25.9l/s @ 18Pa (30%)	Open Outlet	56	57	55	53	55	43	35	30	62	57	39	36
	Open Inlet	48	50	44	41	39	29	25	27	53	44	26	23
	Breakout	48	47	40	36	32	25	24	27	51	39	21	18
32.8l/s @ 27Pa (41%)	Open Outlet	58	61	59	58	58	49	41	37	66	61	43	40
	Open Inlet	48	57	49	45	42	34	27	27	58	48	30	27
	Breakout	50	49	44	40	36	30	26	27	53	42	25	22
37l/s @ 34Pa (53%)	Open Outlet	58	62	64	60	61	53	44	41	68	64	46	43
	Open Inlet	48	58	50	48	44	37	30	28	59	50	32	29
	Breakout	51	51	45	42	38	32	28	27	55	44	26	23
43.2l/s @ 45Pa (65%)	Open Outlet	60	65	66	63	62	61	48	45	71	67	49	46
	Open Inlet	52	57	52	50	46	42	33	30	60	52	34	31
	Breakout	51	54	47	44	40	37	31	27	57	46	29	26
49.3l/s @ 60Pa (77%)	Open Outlet	65	66	66	65	64	64	51	49	73	69	52	49
	Open Inlet	56	57	55	53	48	47	36	32	62	55	37	34
	Breakout	56	58	50	47	42	41	34	28	61	49	32	29
58.6l/s @ 80Pa (88%)	Open Outlet	68	73	70	69	68	66	56	54	77	72	55	52
	Open Inlet	58	60	58	56	51	50	41	37	65	58	40	37
	Breakout	61	59	52	50	46	44	38	30	64	52	35	32
63.3l/s @ 100Pa (100%)	Open Outlet	69	71	72	71	69	68	58	57	78	74	57	54
	Open Inlet	58	61	61	59	53	52	44	40	66	60	43	40
	Breakout	60	60	54	51	47	47	40	32	64	54	36	33

Measurements taken at full speed with a resistance of 100Pa, then at the stated percentage speed settings of the unit and corresponding reduced pressure

To enable simplified comparisons with other manufacturers data the above information is tested in accordance with BS EN 13141-7, the end reflection as defined in EN ISO 5135 for a 125mm (204x60mm) duct mounted flush with the wall, has been removed to provide an open outlet/open inlet sound power measurement (see page 1 of 2 for original data)

Figures shown are not 'A' weighted (other than the overall L_{WA}/dBA columns)

Titon acoustic data is independently tested at Sound Research Laboratories

Data is specifically tested for the Eco unit (100% bypass) - non bypass variants with deeper heat exchangers will offer lower acoustic levels

SRL report 80757-SRL-RP-XT-002-P1, 12/08/22

Acoustic Testing – Powered products

Acoustic testing of Titon mechanical ventilation products is measured in accordance with the following standards:-

CME – BS EN 13141-6 – "Ventilation for buildings. Performance testing of components/products for residential ventilation. Exhaust ventilation system packages used in a single dwelling"

MVHR – BS EN 13141-7 – "Ventilation for buildings. Performance testing of components/products for residential ventilation. Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings"

The results are presented in the following format which provides details of the acoustic performance of the unit at each of the standard speed settings.

The 'A' Weighted Sound Power Level in dB is an "in-duct" measurement for the Outlet and Inlet and are given across the frequency range from 125Hz to 8kHz.

The overall level is the logarithmic addition of the frequency bands to give a single figure, this is provided with and without 'A' weighting

The casing breakout is a sound pressure level at a distance of 3 meters, this figure is the lowest quoted and is usually stated in catalogue details. It is calculated from the Overall L_{WA} (sound power level) with a reduction to convert to the sound pressure at 3 meters.

Acoustic data

Titon®

Standard: BS EN 13141-7:2004

Product **HRV1 Qplus**

		'A' Weighted Sound Power Levels dB re. 1pW Frequency Hz							Overall	Overall	Casing Breakout
Speed		125	250	500	1k	2k	4k	8k	L_W	L_{WA}	dBA @ 3m
1	Outlet	31	32	36	24	16	18	22	49	39	9
	Inlet	26	24	29	18	16	18	22	43	32	
	Breakout	11	15	23	14	13	18	22	31	27	
2	Outlet	42	42	49	40	31	21	22	59	51	14
	Inlet	31	32	35	24	17	18	22	48	38	
	Breakout	16	21	29	19	15	18	22	37	31	
3	Outlet	45	46	50	55	37	27	23	63	57	16
	Inlet	33	36	36	31	20	18	22	51	41	
	Breakout	22	26	31	26	17	18	22	41	34	
4	Outlet	49	50	51	58	42	33	26	67	60	20
	Inlet	36	39	39	36	24	19	22	54	44	
	Breakout	23	28	35	31	20	19	22	43	37	
5	Outlet	51	53	54	56	46	38	30	69	60	23
	Inlet	39	42	41	39	28	20	22	57	47	
	Breakout	26	35	37	34	24	22	22	47	40	
6	Outlet	54	56	57	57	50	42	36	72	63	27
	Inlet	42	45	45	41	32	23	22	59	49	
	Breakout	28	33	44	36	28	24	22	50	45	
7	Outlet	58	59	60	60	54	46	41	75	66	32
	Inlet	44	47	49	45	37	27	23	62	53	
	Breakout	30	36	49	39	32	28	22	54	50	
8	Outlet	59	63	63	63	59	50	46	77	69	33
	Inlet	47	51	51	47	42	31	25	65	56	
	Breakout	32	38	49	42	37	32	24	55	51	

Measurements taken at full speed with a resistance of 50Pa, then at the nominal speed settings of the unit and corresponding pressure.
Inlet and outlet levels are Induct

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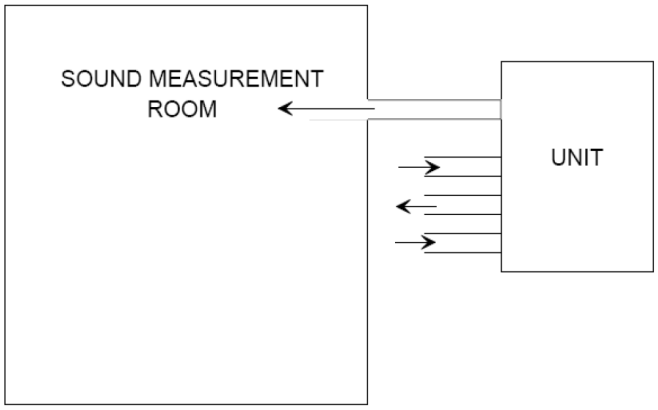
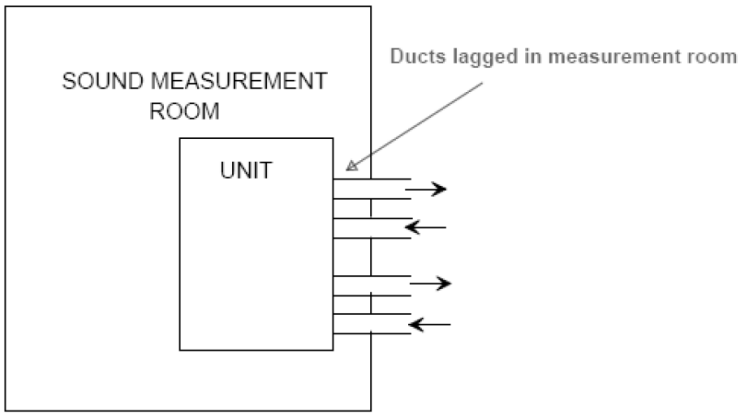
MVHR – Installation set up used during testing

In-duct sound power level measurement – the unit is installed with the outlet (or inlet) connected to the measurement room and

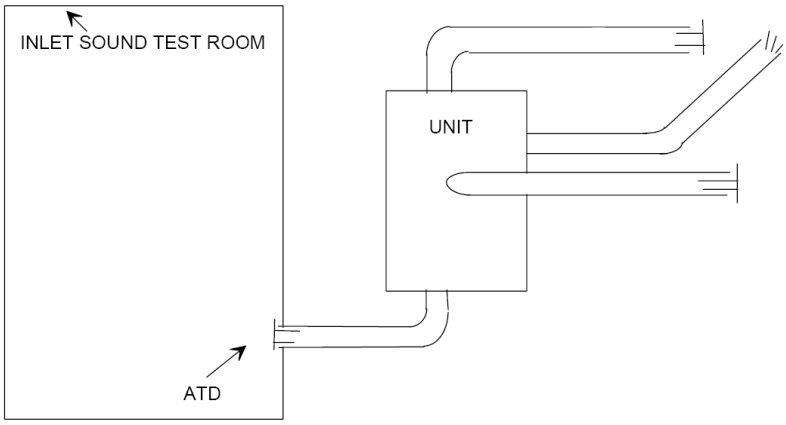


Casing breakout – the inlet and outlet ducts are connected to a separate room so the only noise measured is breakout from the casing

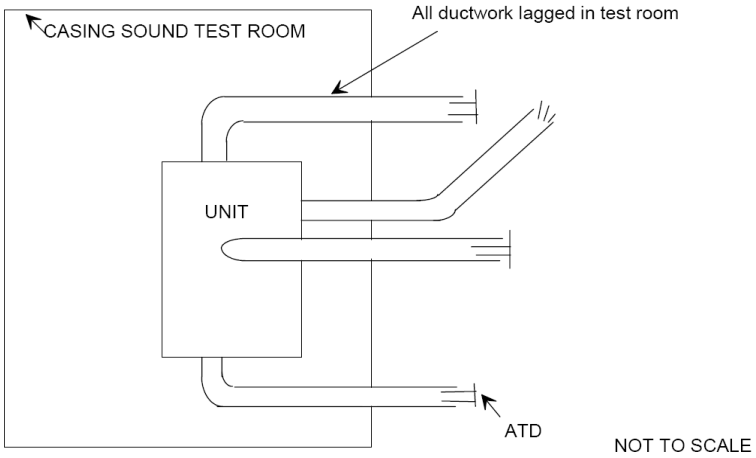


CME – Installation set up used during testing

Inlet sound power levels – all 3 inlets from the CME are fitted with a standard duct set up (as BS EN 13141-6, one is connected to the measuring room and the inlet sound power level recorded.
The three inlets connected with 90 degree bend, 0.5m duct, air terminal device
The single outlet connected with 0.5m duct, 45 degree bend, 2m duct, grille
All duct work 204 x 60mm plastic.



Casing breakout – the inlet and outlet ducts are connected to a separate room so the only noise measured is breakout from the casing



Glossary

Sound Power Level – is a measurement of the actual sound level created at the source, it is not therefore affected by the environment in which the product is installed. This will always be the highest levels quoted as no reductions have been applied for either the environment or distance from the source. Actual installed levels will therefore be significantly lower than these figures but they are useful from which to base any system calculations.

Sound Pressure Level – this must be quoted at a given distance and is dependant on both the distance from the source and environment (a hard walled reflective surface will have a higher level than a soft furnished room which absorbs more sound). Titon levels are given at a distance of 3m (which is commonly quoted) and are free field, hemispherical radiation.

Free field – An environment in which there are no reflective surfaces (useful to describe the sound pressure levels for comparative purposes)

Hemispherical radiation – Sound radiates from a source in all directions, where the product is mounted on a wall or ceiling some sound if reflected from this mounting face. The casing sound pressure levels are based on hemispherical radiation which will be slightly higher than spherical radiation.

'A'Weighting – this is a correction to the frequency bands to replicate the sensitivity of the human ear to different frequencies. The weighting can be removed from the octave bands if required, the corrections are given in the table below.

Frequency Hz	125	250	500	1000	2000	4000	8000
'A' Weighting	-16	-9	-3	0	1	1	-1

Octave band – sound is produced at various frequencies and is therefore measured across a range of frequency or Octave bands (as the above table). The figures can be combined to give an overall level using logarithmic addition.

In Duct levels – a measurement of sound that is taken inside the duct of a ventilation system, this is likely to be a higher level than a non ducted measurement.

Casing Breakout – a measurement of the sound that breaks out of the casing of a unit, the sound from the inlet and outlets of the unit does not form part of this measurement.